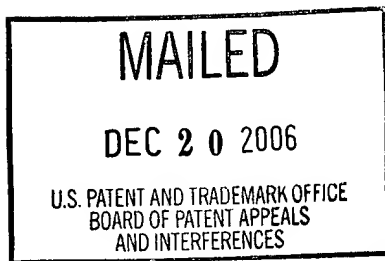


The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



Ex parte JOHN E. HUDSON

Appeal No. 2006-3367  
Application No. 09/849,927

ON BRIEF

Before HAIRSTON, KRASS, and JERRY SMITH, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

This is an appeal from the final rejection of claims 1 through 4, 6 through 21, and 23 through 29.

The disclosed invention relates to a method and system for equalizing a data stream generated from a plurality of space time coded (STC) data streams, and received from a plurality of transmit antenna elements.

Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A method of channel equalisation comprising:  
receiving a data stream generated from a plurality of space time coded (STC) data streams received from a plurality of transmit antenna elements;  
generating via a fast transform a packet spectrum of at least a portion of the data stream, the packet spectrum being a transform domain representation;

receiving a training sequence for a channel through which the data stream has been sent and assessing a channel impulse response for the channel based on the training sequence;  
generating via a fast transform a channel impulse response spectrum in the transform domain for the channel impulse response;  
equalising the packet spectrum with the channel impulse response spectrum to produce an equalised packet spectrum in the transform domain; and  
converting the equalised packet spectrum into time domain equalised data for recovery of information.

The references relied on by the examiner are:

DiToro	4,058,713	Nov. 15, 1977
Perreault	4,141,072	Feb. 20, 1979
Yen et al. (Yen)	4,707,841	Nov. 17, 1987

Claims 1, 2, 4, 6, through 16, 19 through 21, 23 through 27, and 29 stands rejected under 35 U.S.C. 103(a) as being unpatentable over appellant's admitted prior art in view of DiToro.

Claims 3 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over appellant's admitted prior art in view of DiToro and Perreault.

Claims 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over appellant's admitted prior art in view of DiToro and Yen.

Reference is made to the briefs and the answer for the respective positions of the appellant and the examiner.

#### OPINION

We have carefully considered the entire record before us, and we will reverse the obviousness rejections of claims 1 through 4, 6 through 21, and 23 through 29.

According to the examiner (answer, pages 3 and 4), the admitted prior art (specification, page 2, line 30 through page 4, line 12 and page 7, lines 4 through 16) discloses the claim 1 steps of “receiving a data stream generated from a plurality of space time coded (STC) data streams received from a plurality of transmit antenna elements,” and “receiving a training sequence for a channel through which the data stream has been sent and assessing a channel impulse response for the channel based on the training sequence.” The examiner acknowledges (answer, page 4) that the remainder of the steps set forth in claim 1 is not disclosed in the admitted prior art.

The examiner is of the opinion (answer, pages 4 and 5) that DiToro describes the steps missing in the teachings of the admitted prior art. Based upon the teachings of DiToro, the examiner concludes (answer, page 5) that “it would have been obvious to one of ordinary skill in the art at the time of the invention that DiToro teaches an equalization process implemented in the frequency domain and this is implemented in the receiver as described in the communication system as described in the AAPA [applicant’s admitted prior art] so as to accurately recover the transmitted signal in the receiver by minimizing the computational complexity of the equalization process.”

DiToro describes a process of equalization of received signals by apparatus operating in the frequency domain (column 1, lines 1 through 10). DiToro transmits a message signal in burst form, and interleaves known test signals during time gaps in the message signal (Figure 1C; Abstract; column 2, lines 7 through 28). At the receiver, the message signal and the known test signal are converted into the frequency domain (Abstract; column 2, lines 29 and 30). DiToro makes clear that the message signal and

the known test signals are transmitted via the single antenna 22 (Figure 2; column 5, lines 25 through 28; column 11, lines 13 through 19).

Appellant argues (brief, page 7) that the skilled artisan would not modify the appellant's admitted prior art "which utilizes STC in a non-dispersive communications channel with the equalization method disclosed in DiToro" because "[t]he equalization method of DiToro is applicable to a single, partitioned signal transmission over a dispersive communications channel in which time gaps must be inserted between message frames and test signals." Appellant also argues (brief, page 7) that "a skilled person would not find motivation in DiToro to modify the AAPA using the arrangement disclosed in DiToro to arrive at the method of the present invention in view of the inability to insert effective time gaps into the plurality of STC data streams to prevent overlapping at the receiver." Appellant concludes (answer, page 8) that it is only possible to arrive at the method of the present invention through the impermissible use of hindsight.

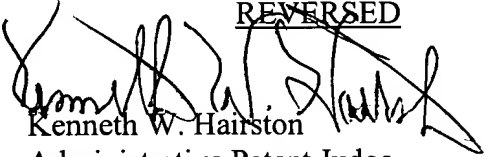


We agree with appellant's arguments. The examiner's reasoning never points out how the skilled artisan is to combine the disparate teachings of the appellant's admitted prior art and the teachings of DiToro. Even if we assume for the sake of argument that the skilled artisan would have found it obvious to combine the teachings, we still find that the steps outlined in the claims on appeal would not be found in the combined teachings. Thus, the obviousness rejection of claims 1, 2, 4, 6 through 14, 19 through 21, 23 through 27, and 29 is reversed because we agree with the appellant's argument that the examiner has resorted to impermissible hindsight to establish the obviousness of the claimed invention.

The obviousness rejections of claims 3, 17, 18, and 28 are reversed because the teachings of Perreault and Yen fail to cure the noted shortcomings in the teachings of the admitted prior art and DiToro.

DECISION

The decision of the examiner rejecting claims 1 through 4, 6 through 21, and 23 through 29 under 35 U.S.C. § 103(a) is reversed.

REVERSED

	)	
Kenneth W. Hairston	)	
Administrative Patent Judge	)	
	)	
	)	BOARD OF PATENT
Errol A. Krass	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
Jerry Smith	)	
Administrative Patent Judge	)	

KWH/eld

Appeal No. 2006-3367  
Application No. 09/849,927

Page 6

William M. Lee, Jr.  
Lee, Mann, Smith, McWilliams, Sweeney & Ohlson  
P.O. Box 2786  
Chicago IL 60690-2786